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Quality of life as an indicator of public management performance in the Republic of Kazakhstan

Abstract

We examine quality of life issues in the Republic of Kazakhstan. Based on systematization of theoretical approaches to the definition of a concept and structure of living standards found in scientific literature and their critical analysis, we have identified and justified the fundamental structural blocks of the quality of life as a complex aggregate indicator reflecting the level of development of many areas of a modern person's life together affecting the degree of his or her life activity's efficiency.

Using an extensive range of statistical data and tools of economic and mathematical modeling, we aim to identify the degree of influence of macroeconomic indicators that characterize certain areas of human life (healthcare, education, living conditions, security, income level, etc.) on living standards.

Given the above, the **central hypothesis** of this study is that public management of the quality of life in the Republic of Kazakhstan can be more effective if it provides a scientifically grounded system of tools based on the assessment of the quality of life which takes into account both regional and industry specifics, feedback from the population as a recipient of public services, and is based on the principle of integration and consistency of state body management decisions.

Results we have obtained imply the existence of a correlation between such quantitative indicators as natural growth, a number of pension recipients, the Gini coefficient and the quality of life index determined by qualitative indicators: general life satisfaction of the population and the level of perception of happiness. Results of the study confirm current trends in the socio-economic development of Kazakhstan, characterized by income inequality issues in both intersectoral and interregional sections, aggravated against the background of the global pandemic threat, the recession of a prolonged nature, and other external shocks and challenges.

Based on the results obtained, the authors conclude that the key causes of socio-economic differentiation in Kazakhstan are associated with a weak institutional environment and weak performance of formal institutions. The quality of institutions impacts the process of socio-economic development in a creative way, including through the formation of an appropriate institutional environment regulating the entire set of socio-economic relations. This circumstance emphasizes the priority of challenges state management bodies face in the context of improving the existing institutional environment, which allows determination of rational behavior boundaries for people and economic entities to optimize and stabilize the socio-economic development of the state as a whole.

We have developed and proposed a number of suggestions and recommendations for improving the existing institutional environment and the system of state management, practical implementation of which should reduce the existing large gap in income levels as the main factor of living standards in Kazakhstan.

Keywords: Living Standards; Income Inequality; Life Satisfaction; Natural Growth of the Population; Happiness; Public Administration; State; Institutions

JEL Classifications: E24; E41; E64; I18; J28; J31

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Якість життя населення як показник ефективності державного управління в Республіці Казахстан**Анотація**

У даній статті досліджуються проблеми якості життя в Республіці Казахстан. На основі проведеної систематизації теоретичних підходів до визначення поняття та структури якості життя населення, що зустрічаються в науковій літературі, їх критичного аналізу авторами були ідентифіковані й обґрунтовані основні структурні блоки якості життя як складного агрегованого показника, що відображає рівень розвитку багатьох сфер життя сучасної людини, які в сукупності впливають на ступінь ефективності її життєдіяльності.

За допомогою використання широкого ряду статистичних даних й інструментів економіко-математичного моделювання авторами було поставлено за мету виявити ступінь впливу макроекономічних показників, що характеризують окремі сфери життя людини (охорона здоров'я, освіта, житлові умови, безпека, рівень доходів тощо) на якість життя.

Отримані результати дозволили зробити висновок про існування кореляційної залежності між такими кількісними показниками, як природний приріст населення, чисельність одержувачів пенсій, коефіцієнт Джині, та індексом якості життя, який визначається якісними показниками, – задоволеністю населення своїм життям у цілому та рівнем сприйняття щастя.

Результати проведеного дослідження підтверджують тенденції, що склалися в соціально-економічному розвитку Казахстану, які характеризуються проблемами нерівності доходів населення в міжгалузевому та міжрегіональному розрізах, що посилюються на тлі світової пандемічної небезпеки, через пролонгований характер рецесії та інші зовнішні шоки й виклики.

На основі отриманих результатів і порівняння Казахстану з рядом розвинених країн (Швеція, Норвегія, Данія та Швейцарія) авторами зроблено висновок, що ключові причини соціально-економічної диференціації в Казахстані пов'язані зі слабким інституціональним середовищем і низькою якістю формальних інститутів. Авторами розроблено ряд пропозицій і рекомендацій щодо вдосконалення інституційного середовища та чинної системи державного управління, практична реалізація яких дозволить скоротити наявний значний розрив у рівні доходів населення, що виступає основним чинником якості життя казахстанців.

Ключові слова: якість життя населення; нерівність доходів; задоволеність життям; щастя; природний приріст населення; державне управління; інститути.

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Качество жизни населения как показатель эффективности государственного управления в Республике Казахстан**Аннотация**

В данной статье исследуются проблемы качества жизни в Республике Казахстан. Авторами на основе проведенной систематизации теоретических подходов к определению понятия и структуры качества жизни населения, встречающихся в научной литературе, и их критического анализа были идентифицированы и обоснованы основополагающие структурные блоки качества жизни как сложного агрегированного показателя, отражающего уровень развития многих сфер жизни современного человека, в совокупности влияющих на степень эффективности его жизнедеятельности.

Посредством использования обширного ряда статистических данных и инструментов экономико-математического моделирования авторами поставлена цель выявить степень влияния макроэкономических показателей, характеризующих отдельные сферы жизни человека (здравоохранение, образование, жилищные условия, безопасность, уровень доходов и др.) на качество его жизни.

Полученные результаты позволили сделать вывод о существующей корреляционной зависимости между такими количественными показателями, как естественный прирост, численность получателей пенсий, коэффициент Джини, и индексом качества жизни, который определяется качественными показателями, – удовлетворенностью населения своей жизнью в целом и уровнем восприятия счастья.

Результаты проведенного исследования и сравнения Казахстана с рядом развитых стран (Швеция, Норвегия, Дания и Швейцария) подтверждают сложившиеся тенденции в социально-экономическом развитии Казахстана, характеризующиеся проблемами неравенства доходов населения в межотраслевом и межрегиональном разрезе, усугубляющимися на фоне мировой пандемической опасности, пролонгированного характера рецессии и прочих внешних шоков и вызовов. На основе полученных результатов авторами сделан вывод о том, что ключевые причины социально-экономической дифференциации в Казахстане связаны со слабой институциональной средой и низким качеством формальных институтов.

В заключение авторами разработан ряд предложений и рекомендаций по совершенствованию существующей институциональной среды и действующей системы государственного управления, практическая реализация которых позволит сократить существующий значительный разрыв в уровне доходов населения, который выступает основным фактором качества жизни казахстанцев.

Ключевые слова: качество жизни населения; неравенство доходов; удовлетворенность своей жизнью; счастье; естественный прирост населения; государственное управление; институты.

1. Introduction

In today's world, the main task of the organs of state sovereignty is provision of positive effects of appropriate administrative structures on economic and institutional processes in the country, which should be reflected by appropriate indicators of socio-economic development, and determine the performance of state management focused on providing high living standards. As a rule, defining a universal methodology for assessing the effectiveness of public administration is a complicated task, namely, a model that will simultaneously cover such important aspects of human life as health, education, employment, income, living conditions, ecology, satisfaction with social relations, security, and other living standards.

The scale and diversity of the notion «quality of life» determine the variety of approaches to its assessment. State statistics bodies, research institutes and various international expert organizations, as well as both foreign and domestic scientists devote their works to the assessment of main living standard indicators. The differences in existing methods for living standards assessment manifest themselves in such issues as: selecting the range of indicators of quality of life, their measurement, the choice of methods and models of assessment for obtaining a generalized value judgment about the quality of life of an individual, group of people, a particular region or country as a whole.

Every year, the tasks of improving the performance of public administration for better quality of life of the population are becoming increasingly important in various countries. However, there are no universal models optimal for use by all countries. Due to this, each state develops its own model for assessing the performance of socio-economic development management aimed at improving the quality of life with a certain set of parameters and taking into account national circumstances and priorities.

According to the report for 2017-2019, Kazakhstan took the 50th place in the ranking among 153 countries, dropping by 6 places (44th place back in 2008-2012). The following six indicators serve as the decisive factors in determining the state's position in the rating: GDP per capita, social assistance, life expectancy, personal freedoms of citizens, their generosity, and attitude towards corruption. In 2019, the top 10 happiest countries in the world were as follows: Finland, Denmark, Norway, Iceland, the Netherlands, Switzerland, Sweden, New Zealand, Canada, and Austria. Finland has been a leader for several years now. Experts believe that the Finns' recipe for happiness lies in the attitude of people to both their own lives and the lives of their fellow citizens: willingness to pay high taxes to guarantee their own social security; public confidence in the government, which does not restrict the freedom of citizens for their own benefit; permanent monitoring of feedback in the context of «public authorities-service recipient» and responsiveness to incoming requests (Helliwell et al., 2020).

Unfortunately, to this day, Kazakhstan cannot offer a recognized and practically used conceptual approach to assessing and managing the quality of life. However, as per the best international practices of governance mechanisms having a substantial positive impact on the course of socio-economic processes taking place in the country, the modern paradigm of the state management system is based on the principle of integration of the main socio-economic policy directions. In addition, the systematic nature of the «quality of life» indicator should be reflected in the relevant indicators of socio-economic development and form the basis for the activities of the authorized state body that conducts and is responsible for monitoring, controlling and planning

the quality of life index in the Republic of Kazakhstan, which unequivocally emphasizes the relevance of the research topic.

2. Brief Literature Review

Over the centuries, the efforts of representatives of foreign and domestic scientific schools would gradually form and develop a steady trend of deepening theoretical ideas about various aspects of human life, starting with the characteristics of individual aspects of human living conditions, through the concepts of wealth, welfare, and living standard, and finally to the understanding, perception and recognition of the concept of quality of life. Such scientists as A. Smith, F. Quesnay, M. Weber, E. Durkheim, L. Walras, J. Keynes, and K. Marks, etc. have laid the foundations for the emergence of a concept of quality of life.

In particular, one of the major representatives of classical political economy, a Scottish economist and philosopher Adam Smith, in his work «An Inquiry into the Nature and Causes of the Wealth of Nations», has justified the dependence of a social welfare level from correlation between consumption of the annual product needs of consumers, the proportion of the population engaged in productive labor, and labor productivity. In his opinion, the greater the ratio between the number of products consumed and the population of the country, the higher the level of material well-being (Magomayev, 2006).

Particularly noteworthy in laying theoretical foundation with the economic understanding of social issues are the representatives of Keynesian school, which divides income into consumption and savings, and reveals the motives of cost containment and the main regulatory role in raising incomes given by the state. According to J. M. Keynes, by no means always individual rational actions lead to a corresponding result at the social level, since there is another superindividual rationality (Nagimova, 2010).

The Marxism-Leninism classics would consider the concepts of «welfare» and «standard of living» almost synonymous. The concept of «standard of living» was first introduced by K. Marx in lecture series «Value, Price and Profit», in which he considered it as a socio-economic characteristic of the level and degree of satisfaction of material, spiritual and social needs of the population, individual territories, strata and social groups, families and individuals. In his understanding, the standard of living is basically determined by the level of development of material production, the service sector, and the economy as a whole, and unlike the classical school, he goes to consider consumption beyond the boundaries of labor and the need to predict future consumption relations (Magomayev, 2006).

In turn, the term «quality of life,» as a concept that comprehensively characterizes the living conditions of a person, begins to be used in scientific circulation with the appearance of «The Affluent Society» by the American economist J. Galbraith in 1958. The author points out that «in a society where people are hungry, sick and poorly dressed, the most important task of the economy is to increase income.» (Galbraith, 1958).

In today's world, interpretation of the definition of «quality of life» is increasingly used in the analysis of not only purely economic, but also social, institutional, demographic, and political processes. The variety of knowledge areas that operate with the concept of «quality of life,» and the differences in the goals of scientific research have given rise to a large number of approaches to determining the structure of the living standards, their conceptual and structural models.

When determining international indices (namely Human Development Index, Better Life Index, Quality of Life Index, Satisfaction with Life Index throughout the world, Happy Planet Index, etc.) by such authoritative international rating agencies as the United Nations Development Programme (hereinafter referred to as UNDP), the Statistical Office of the European Union (Eurostat), the Organization for Economic Cooperation and Development (hereinafter OECD), and quality of life indicators proposed by various foreign and domestic authors, based on various methodological developments, the following three conceptual approaches to measuring the quality of life are distinguished: objective, subjective, and integral. Let us consider them.

1. So, among **objective approaches** to measuring the living standards we would like to highlight the study by a group of domestic scientists R. Kuzembekova, A. Sadvakassova, M. Iskakbayeva, who based the correlation and regression analysis on such basic socio-economic factors affecting the living standards of the Republic of Kazakhstan as: investment in fixed assets, nominal

income of the population, the number of people employed in the economy, the volume of public services, the consumer price index, and business loans. The authors come to the conclusion that the determining factor of life satisfaction is the degree of satisfaction of their material needs through income, and propose to assess living standards through the degree of satisfaction of the population needs in three components: the decent life of the population (financial regulation), the healthy lifestyle and comfort, and providing quality public social services (Kuzembekova, Sadvakassova, & Iskakbayeva, 2013).

Another group of Kazakh scientists led by G. N. Nyussupova took social features as key indicators of the population's life (including education, science and innovation, healthcare, culture, security, living conditions, social infrastructure, social security, leisure and recreation), based on which they calculated integral indices by linear scaling in dynamics for the period of 1999-2017. Based on the results obtained, scientists have carried out a typology of Kazakhstan regions according to the social block of the living standard level (Nyussupova et al., 2019).

According to the Russian scientist A.I. Rossoshansky, the most statistically significant factor affecting the quality of life is the indicators of economic growth, housing construction, infrastructure development and cultural characteristics. He constructed a multiple regression model based on panel data, which revealed the correlation interdependence between the quality of life index and a number of indicators that characterize the economic and social development of Russian regions grouped on the basis of similar characteristics. The advantages of this method are as follows: a small number of statistical indicators with their high reliability, content and information availability, the absence of expert assessments and unjustified weight factors (Rossoshanskii, 2016, 2018).

An interesting approach is that of another Russian author, A. A. Mironenkov, who uses the Pareto analysis to study the living standards in Russian regions. This method, according to the author, allows comparison of regions with the ability to apply ordinal data, that is, for any variables, only their order is known and the exact values for each region are not given. In addition, the algorithm is undemanding to computing power and does not require expert assessments (devoid of subjective intervention from the researcher), except for the selection of research variables (Mironenkov, 2020).

2. Dorota Węziak-Białowolska uses a different, **subjective approach** to assessing the quality of life in her scientific paper, which studied various aspects of living standards in European cities using survey data potentially related to life satisfaction in the city as follows: availability of services, environment and social aspects in cities; socio-demographic factors; characteristics of the city, such as economic development, labor repression, size, location, quality of institutions and security. The results have shown that urban life satisfaction varies significantly both within cities and across Europe. Dissatisfaction with public transport, cultural facilities, availability of retail outlets, green spaces, air quality, people's trust, public administration and administration performance have contributed significantly to dissatisfaction with life in the city. However, when citizens would feel safe and satisfied with their place of residence, they were more likely to feel satisfied (Węziak-Białowolska, 2016).

Subjective nature can be traced in the research by Russian scientists T. V. Morozova, R. V. Belaya, and S. G. Murina, who propose a system of private and integral indicators to assess quality of life based on individual perception of socio-economic well-being, as well as the integral index, i.e., efficiency of social institutions that reflect the effectiveness of the existing social institutions aimed at improving or maintaining the living standard level. They believe the efficiency rate of social institutions, while describing the quality of a society from the standpoint of efficiency of social institutions formed in it, also reflects the performance of state administration bodies in formation of civil society and improving the quality of life (Morozova, Belaya, & Murina, 2013).

3. As part of the **integral approaches** to assessing the quality of life, we would like to highlight the study by a group of authors led by O. A. Kozlova, who proposed a methodological approach that combines the assessment of objective living standards indicators and subjective assessments of local population, which, in their opinion, allows a more adequate assessment of living standards in each specific region. The study has shown that formation of both objective and subjective assessments allows not only assessing the real situation in the region, but also to identify and assess the reasons that require increased attention from the authorities when making management decisions to improve the quality of life in the region (Kozlova et al., 2015).

Also noteworthy is the study of foreign authors O. Lobont, S. Vatavu, O. Glont, and L. Mihit, who assessed the living standards in the European Union countries by using a consolidated (integral) indicator of government quality and citizen well-being with an emphasis on both objective (economic indicators related to GDP: employment level, ratio of public investment and spending on social protection) and subjective (those related to social aspects: trust in EU institutions and quality of life) measurements. The researchers have applied multivariate analysis using principal component analysis, which converts a set of correlated variables into a set of linear and uncorrelated variables, and thus identified variance in the data set using linear combinations of the original data. According to the authors' definition, «the quality of life is how a person evaluates or values life in general. This indicator is designed to give interviewees a broader and more reflective assessment. It is not intended to represent their emotional state, but is a reflexive judgment on the level of overall life satisfaction (financial situation, living conditions, workplace, environment, leisure and social life). The indicator reflects the percentage of respondents who showed a high level of life satisfaction.» (Lobont et al., 2019).

The scientists M. Kobus, O. Pórchłopek, and G. Yalonetzky, when assessing the living standards, one should pay attention to methods suitable for non-income indicators (beyond GDP per capita). The authors present data on the ranking of OECD countries in terms of well-being and inequality in education and happiness. As non-income parameters, they chose education and life satisfaction (Kobus, Pórchłopek, & Yalonetzky, 2019).

Due to the growing interest among politicians in developed countries in a more complete measurement of the quality of life than with the help of GDP per capita statistics, the Nobel Prize winners in Economics, J. Stiglitz, A. Sen, and J. P. Fitoussi in their 2008 study have proposed a comprehensive review of the shortcomings of GDP as an indicator of social well-being. They drew attention to the fact that GDP does not consider economic inequality or effects of economic decisions on the environment compared to the notion of «quality of life» as a broader concept of life than economic production. The authors believe the quality of life depends on people's health and education, their daily activities (which include the right to decent work and housing), their participation in the political process, the social and natural environment in which they live, and factors that determine personal economic security. Measuring all these parameters requires both objective and subjective data. Quality of life indicators in all areas should fully cover inequality. Inequality in the status of people is an integral part of any assessment of the quality of life across countries and its development over time (Stiglitz, Sen, & Fitoussi, 2016).

The authors Alex C. Michalos and P. Maurine Hatch have ranked 105 countries on twenty one indicators using the following four objective indices: the Human Development Index (HDI), the Weighted Index of Social Progress (WISP), the Social Progress Index (SPI), the Sustainable Society Index (SSI), and one subjective index, the World Happiness Survey (WHS), to create overall indicators of quality of life, including the number of Healthy Life Years (HLY), to determine the correlation between indices. A large part of correlations has increased when they used the Gini coefficient to create general indices of quality of life based on equality of income. Having combined the results, the authors arranged the countries in order from best to worst. Switzerland, Norway, Iceland, Australia, Finland, the Netherlands, Slovakia, Belgium, Sweden and Denmark made the top ten (Michalos & Hatch, 2019).

Thus, the analysis of existing scientific points of view found in the scientific literature in this area indicates that the quality of life is not only a reflection of the actual living conditions of the population, but also a generalized indicator of the public administration performance. However, despite the depth and completeness of previously conducted scientific research in the context of the assessment of quality of life, the modern conditions of socio-economic development of Kazakhstan determine the practical significance of formation and use of integral index of quality of life, which will be determined by the needs of the population in conformity with socially necessary requirements, and level of national happiness. We believe the advantage of this approach is that in addition to the results of macroeconomic indicators, it can consider public opinion (as an element of feedback from state bodies with the service recipient), which will contribute to further development and implementation of fundamentally new strategies for effective socio-economic policy based on targeted support for each population group, taking into account its needs, and thereby allowing public authorities to more effectively address the issues of poverty and income inequality, to identify patterns of changes in indicators

and links between them in program documents, to form a correct idea of development priorities, to share responsibility for everything that happens in a particular territory and to improve the living standards in the country.

Given the above, the **central hypothesis** of this study is that state control of the living standards in the Republic of Kazakhstan can be more efficient should it provide scientific system of tools based on the assessment of quality of life, taking into account regional and industry specifics, feedback with the population as the service recipient, and the principle of integration and consistency of administrative decisions by public authorities.

The proposed hypothesis allows us to formulate the following issues, which we will address with the help of correlation and regression analysis:

- 1) What is the dynamics of average values of the population's life satisfaction in the context of regions, locality types, gender and age groups?
- 2) Is there a relationship between the (quantitative) indicator of natural population growth and such (qualitative) indicators as: satisfaction with the state of their health and the cost of health services, satisfaction with their financial and economic situation of the family, the ability to independently purchase housing and state support in the purchase of housing?
- 3) What macroeconomic indicators that characterize the socio-economic development of the Kazakhstan regions have an impact on the quality of life index (hereinafter referred to as the QLI), which is determined by life satisfaction indicators and the level of perception of happiness, and acts as the resulting dependent variable?

3. The purpose of this study is to identify existing issues and the degree of public administration's performance, and to propose priority directions of their solution in the Republic of Kazakhstan based on the analysis of individual groups of indicators for assessing the quality of life, which determine the factors that have a complex impact on the regional living standards, and using mathematical modeling methods.

4. Research Methodology

To confirm the proposed hypothesis, we have developed an economic and mathematical model within the framework of this scientific study. The novelty of the proposed author's approach to the construction of this model is in the use of an integral approach to measuring the living standards based on identifying the dependence of resulting QLI indicators on both quantitative and qualitative data.

For economic and mathematical modeling, we used correlation and regression analysis of panel data and constructed a linear regression model, transparent and interpretable for analytics. It allows us to describe the results of the study using sufficiently accurate linear models based on processing a large set of data.

The choice of panel data stemmed from the following advantages:

- Presence of a large number of observations increases the number of degrees of freedom, ultimately reducing the dependence between the explanatory variables, and therefore the standard errors of estimates;
- Ability to analyze a large number of economic issues that cannot be allocated to time sequences and spatial data separately;
- Prevention of aggregation bias, which inevitably occurs when analyzing both time sequences and cross-sectional data;
- Ability to track the individual evolution of the characteristics of all studied objects over time;
- There is no need to search for «good» tools when assessing models with endogenous regressors;
- Ability to avoid specification errors arising from non-inclusion of essential variables in the model (Ratnikova, 2006).

Figure 1 is a graphical representation of the logic and structure of the model construction.

We have performed graphical representation of interdependencies and data analysis using Microsoft Excel sets of mathematical and statistical functions and tools, based on quantitative (statistical) and qualitative (64 observations of survey data among 12,000 households) indicators of the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan for 2015-2019 (except for 2016) by regions (Agency for Strategic Planning and Reforms of the Republic of Kazakhstan, 2020).

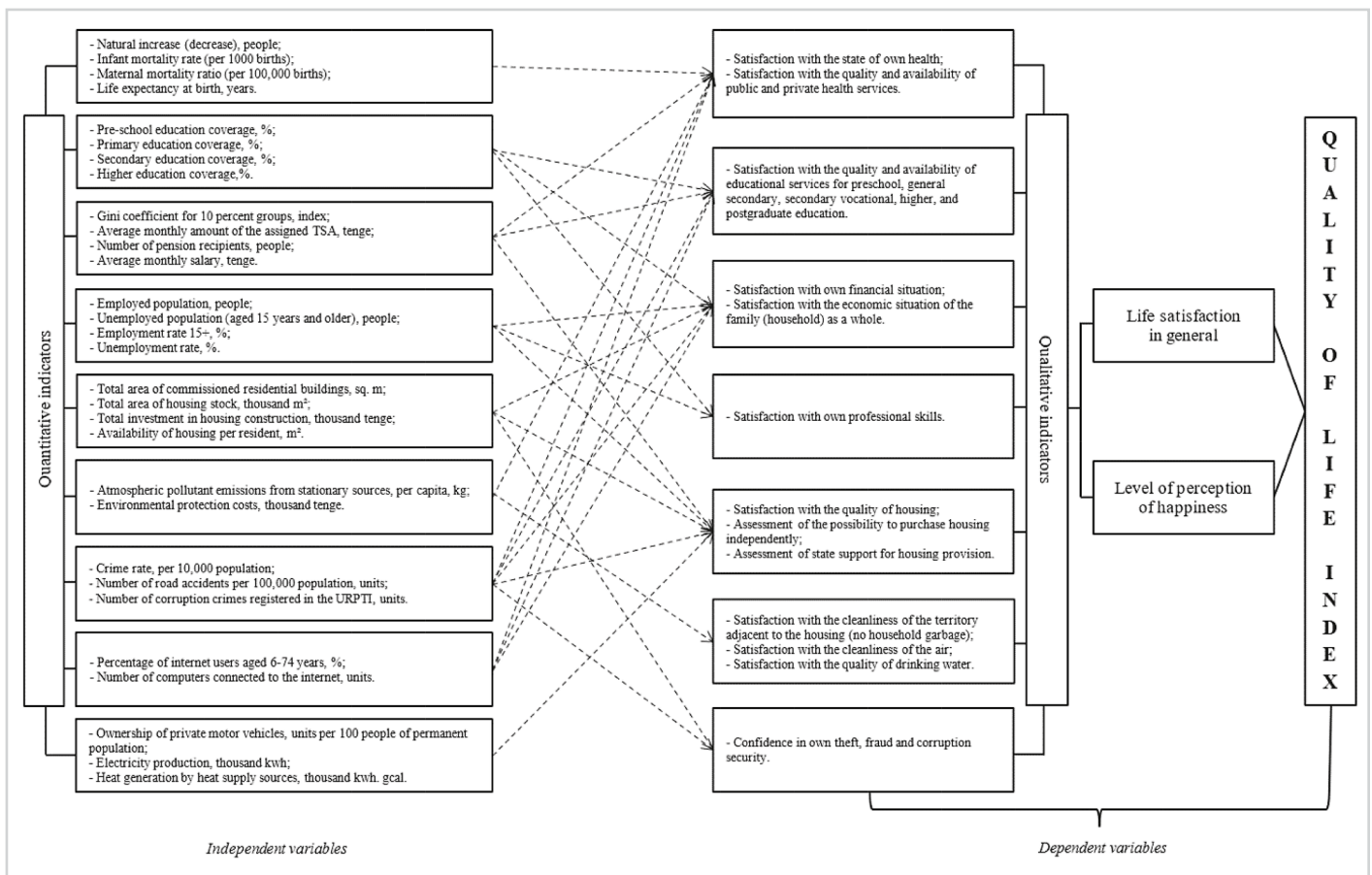


Figure 1:
Logic and structure of the ongoing econometric research
 Source: Compiled by the authors

5. Results

1. To assess the living standards in the Republic of Kazakhstan, we selected 45 main macro-economic indicators in the context of 16 regions (Akmola, Aktobe, Almaty, Atyrau, West Kazakhstan (hereinafter - WKR), Zhambyl, Karaganda, Kostanay, Kyzylorda, Mangistau, South Kazakhstan (hereinafter - SKR), Pavlodar, North Kazakhstan (hereinafter - SKR), East Kazakhstan (hereinafter - EKR), cities of Nur-Sultan and Almaty), each of which has an equivalent character and has no absolute priority over the others. The list of main indicators and their reference values are presented in Table 1.

For the first stage, we have correlated quantitative indicators in absolute value with the regional population, and normalized them. After that, we have changed certain initial numerical values using the following scaling formula for graphical representation in the dynamics of the selected indicators:

$$m = \frac{a}{10^n}, \quad (1)$$

where:

a is the primary numeric data; and

n is the number of integer digits of the number a (number of zeroes up to the significant digit).

The paper assumed the presence of algebraic (polynomial) dependencies between the indicators. Existence of such a relationship suggests that there are correlations between these data. Therefore, the next step was to analyze correlations between the 30 quantitative indicators we have selected (Table 2). Correlation dependence of the values \bar{x} and \bar{y} is characterized by the value of the correlation coefficient r_{xy} , the values of which fall in the interval [-1; 1]:

$$r(x, y) = \frac{\sum(x-\bar{x})(y-\bar{y})}{\sqrt{\sum(x-\bar{x})^2(y-\bar{y})^2}}, \quad (2)$$

where:

\bar{x} and \bar{y} and are the means of samples.

The correlation coefficient shows the tightness of a linear coupling of \bar{x} and \bar{y} as well:

- the closer r_{xy} is modulo 1, the more significant the dependence is, and
- the closer r_{xy} is modulo 0, the greater is the independence.

Table 1:
A list of quantitative indicators to measure the quality of life and their legend

Quality of life criteria	Statistical indicators	Legend
Health care – hc	Natural increase (decrease), people	q_hc1
	Number of doctors of all specialties, thousand people	q_hc2
	Life expectancy at birth, years	q_hc3
Education – edu	Secondary education coverage, %	q_edu1
	Higher education coverage, %	q_edu2
	Public expenditure on education, million tenge	q_edu3
Income – inc	Gross regional product, million tenge	q_inc1
	Gini coefficient by 10% (decile) groups, index	q_inc2
	Minimum subsistence level on average per capita, tenge per year on average	q_inc3
	Number of pension recipients, people	q_inc4
	Average monthly pension, tenge	q_inc5
	Average monthly salary, tenge	q_inc6
Employment – empl	Employed population, people	q_empl1
	Self-employed workers, people	q_empl2
	Unemployed population (aged 15 years and older), people	q_empl3
Living conditions – lc	Total area of commissioned residential buildings, sq. m	q_lc1
	Number of apartments in commissioned residential buildings, units	q_lc2
	Total area of housing stock, thousand m ²	q_lc3
	Private investment in housing construction, thousand tenge	q_lc4
	Total investment in housing construction, thousand tenge	q_lc5
	Supply of housing per resident, m ²	q_lc6
Ecology – eco	Atmospheric pollutant emissions from stationary sources, per capita, kg	q_eco1
	Environmental protection costs, thousand tenge	q_eco2
Safety – saf	Crime rate, per 10,000 population	q_saf1
	Number of road accidents per 100,000 population, units	q_saf2
Digitalization – dt	Percentage of internet users aged 6-74 years, %	q_dt1
	Number of computers connected to the internet, units	q_dt2
Infrastructure – infr	Electricity production, thousand kWh	q_infr1
	Heat generation by heat supply sources, thousand kwh. gcal	q_infr2
	Thermal energy consumption, thousand gcal	q_infr3

Source: Compiled by the authors based on data from the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan (2020)

Table 2:
Results of paired correlation coefficients of macroeconomic indicators for the Republic of Kazakhstan for the period of 2015-2019

	q_hc1	q_hc2	q_hc3	q_edu1	q_edu2	q_edu3	q_inc1	q_inc2	q_inc3	q_inc4	q_inc5	q_inc6	q_empl1	q_empl2	q_empl3	q_lc1	q_lc2	q_lc3	q_lc4	q_lc5	q_lc6	q_eco1	q_eco2	q_saf1	q_saf2	q_dt1	q_dt2	q_infr1	q_infr2	q_infr3	
q_hc1	1.00	0.15	0.60	0.39	0.02	0.09	0.29	-0.76	0.23	-0.98	-0.12	0.47	-0.67	-0.37	-0.65	0.60	0.56	-0.38	0.44	0.43	0.11	-0.35	0.20	-0.09	-0.04	0.14	0.11	-0.26	-0.14	-0.17	
q_hc2	0.15	1.00	0.70	0.70	0.82	-0.38	0.37	0.14	0.29	-0.15	0.53	0.34	0.08	-0.61	0.03	0.59	0.63	0.53	0.71	0.71	0.83	-0.04	-0.18	0.74	0.45	0.32	0.84	-0.01	0.16	0.48	
q_hc3	0.60	0.70	1.00	0.77	0.64	-0.04	0.51	-0.31	0.61	-0.58	0.54	0.61	-0.23	-0.57	-0.31	0.74	0.75	0.18	0.76	0.76	0.67	-0.26	-0.04	0.38	0.40	0.56	0.71	-0.15	0.02	0.15	
q_edu1	0.39	0.70	0.77	1.00	0.73	-0.25	0.49	-0.06	0.34	-0.39	0.34	0.46	-0.01	-0.50	0.05	0.61	0.60	0.43	0.58	0.58	0.66	-0.24	-0.05	0.63	0.64	0.26	0.73	-0.16	0.02	0.19	
q_edu2	0.02	0.82	0.64	0.73	1.00	-0.25	0.40	0.19	0.33	-0.03	0.56	0.30	0.10	-0.38	0.13	0.39	0.42	0.51	0.5	0.51	0.7	-0.08	-0.18	0.67	0.55	0.38	0.79	-0.07	0.06	0.29	
q_edu3	0.09	-0.38	-0.04	-0.25	-0.25	1.00	0.07	-0.16	0.45	-0.04	0.31	0.18	-0.23	0.23	-0.43	0.06	0.04	-0.15	-0.05	-0.01	-0.22	0.02	0.28	-0.68	-0.37	0.17	-0.24	0.03	-0.04	-0.22	
q_inc1	0.29	0.37	0.51	0.49	0.40	0.07	1.00	-0.18	0.46	-0.26	0.47	0.90	0.12	-0.63	0.06	0.65	0.60	0.46	0.47	0.50	0.55	0.11	0.54	0.20	0.07	0.17	0.71	0.08	0.41	0.58	
q_inc2	-0.76	0.14	-0.31	-0.06	0.19	-0.16	-0.18	1.00	-0.04	0.79	0.27	-0.36	0.53	0.13	0.46	-0.40	-0.36	0.33	-0.18	-0.18	0.03	0.15	-0.24	0.24	0.24	-0.04	0.11	0.06	-0.03	0.14	
q_inc3	0.23	0.29	0.61	0.34	0.33	0.45	0.46	-0.04	1.00	-0.15	0.83	0.67	-0.07	-0.40	-0.31	0.54	0.53	0.21	0.54	0.55	0.50	-0.13	0.12	-0.15	0.03	0.53	0.48	-0.07	0.12	0.08	
q_inc4	-0.98	-0.15	-0.58	-0.39	-0.03	-0.04	-0.26	0.79	-0.15	1.00	0.17	-0.42	0.66	0.35	0.61	-0.57	-0.53	0.34	-0.40	-0.38	-0.11	0.34	-0.17	0.05	0.01	-0.13	-0.10	0.26	0.15	0.20	
q_inc5	-0.12	0.53	0.54	0.34	0.56	0.31	0.47	0.27	0.83	0.17	1.00	0.53	0.19	-0.40	-0.09	0.44	0.48	0.45	0.54	0.57	0.64	0.12	0.07	0.10	0.11	0.51	0.66	0.11	0.27	0.35	
q_inc6	0.47	0.34	0.61	0.46	0.30	0.18	0.90	-0.36	0.67	-0.42	0.53	1.00	-0.05	-0.70	-0.17	0.78	0.73	0.34	0.58	0.60	0.59	0.02	0.54	0.04	-0.05	0.23	0.65	0.04	0.41	0.42	
q_empl1	-0.67	0.08	-0.23	-0.01	0.10	-0.23	0.12	0.53	-0.07	0.66	0.19	-0.05	1.00	0.08	0.88	-0.05	-0.02	0.54	0.08	0.09	0.27	0.26	0.01	0.41	0.05	0.02	0.26	0.20	0.28	0.48	
q_empl2	-0.37	-0.61	-0.57	-0.50	-0.38	0.23	-0.63	0.13	-0.40	0.35	-0.40	-0.70	0.08	1.00	0.14	-0.63	-0.59	-0.42	-0.49	-0.50	-0.66	-0.29	-0.39	-0.29	-0.19	-0.20	-0.65	-0.25	-0.56	-0.52	
q_empl3	-0.65	0.03	-0.31	0.05	0.13	-0.43	0.06	0.46	-0.31	0.61	-0.09	-0.17	0.88	0.14	1.00	-0.18	-0.18	0.53	-0.12	-0.12	0.17	0.16	-0.05	0.50	0.24	-0.16	0.19	0.11	0.18	0.36	
q_lc1	0.60	0.59	0.74	0.61	0.39	0.06	0.65	-0.40	0.54	-0.57	0.44	0.78	-0.05	-0.63	-0.18	1.00	0.98	0.32	0.86	0.87	0.72	-0.21	0.25	0.31	-0.02	0.30	0.68	-0.15	0.19	0.33	
q_lc2	0.56	0.63	0.75	0.60	0.42	0.04	0.60	-0.36	0.53	-0.53	0.48	0.73	-0.02	-0.59	-0.18	0.98	1.00	0.32	0.91	0.92	0.75	-0.22	0.17	0.33	-0.04	0.33	0.70	-0.15	0.15	0.33	
q_lc3	-0.38	0.53	0.18	0.43	0.51	-0.15	0.46	0.33	0.21	0.34	0.45	0.34	0.54	-0.42	0.53	0.32	0.32	1.00	0.28	0.30	0.73	0.26	0.07	0.56	0.28	0.06	0.66	0.19	0.39	0.60	
q_lc4	0.44	0.71	0.76	0.58	0.50	-0.05	0.47	-0.18	0.54	-0.40	0.54	0.58	0.08	-0.49	-0.12	0.86	0.91	0.28	1.00	1.00	0.79	-0.23	-0.03	0.39	0.02	0.41	0.74	-0.17	0.07	0.32	
q_lc5	0.43	0.71	0.76	0.58	0.51	-0.01	0.50	-0.18	0.55	-0.38	0.57	0.60	0.09	-0.50	-0.12	0.87	0.92	0.30	1.00	1.00	0.79	-0.21	0.00	0.38	0.01	0.42	0.76	-0.16	0.09	0.34	
q_lc6	0.11	0.83	0.67	0.66	0.70	-0.22	0.55	0.03	0.50	-0.11	0.64	0.59	0.27	-0.66	0.17	0.72	0.75	0.73	0.79	0.79	1.00	0.05	-0.04	0.61	0.22	0.36	0.89	0.03	0.33	0.56	
q_eco1	-0.35	-0.04	-0.26	-0.24	-0.08	0.02	0.11	0.15	-0.13	0.34	0.12	0.02	0.26	-0.29	0.16	-0.21	-0.22	0.26	-0.23	-0.21	0.05	1.00	0.40	-0.12	-0.07	0.00	0.01	0.93	0.84	0.55	
q_eco2	0.20	-0.18	-0.04	-0.05	-0.18	0.28	0.54	-0.24	0.12	-0.17	0.07	0.54	0.01	-0.39	-0.05	0.25	0.17	0.07	-0.03	0.00	-0.04	0.40	1.00	-0.28	-0.22	-0.19	0.07	0.34	0.54	0.30	
q_saf1	-0.10	0.74	0.38	0.63	0.67	-0.68	0.20	-0.24	-0.15	0.05	0.10	0.04	0.41	-0.29	0.50	0.31	0.33	0.56	0.39	0.38	0.61	-0.12	-0.28	1.00	0.55	0.13	0.61	-0.10	0.02	0.44	
q_saf2	-0.04	0.45	0.40	0.64	0.55	-0.37	0.07	0.24	0.03	0.01	0.11	-0.05	0.05	-0.19	0.24	-0.02	-0.04	0.28	0.02	0.01	0.22	-0.07	-0.22	0.55	1.00	0.18	0.39	0.05	-0.05	0.03	
q_dt1	0.14	0.32	0.56	0.26	0.38	0.17	0.17	-0.04	0.53	-0.13	0.51	0.23	0.02	-0.20	-0.16	0.30	0.33	0.06	0.41	0.42	0.36	0.00	-0.19	0.13	0.18	1.00	0.34	0.09	0.04	0.06	
q_dt2	0.11	0.84	0.71	0.73	0.79	-0.24	0.71	0.11	0.48	-0.10	0.66	0.65	0.26	-0.65	0.19	0.68	0.70	0.66	0.74	0.76	0.89	0.01	0.07	0.61	0.39	0.34	1.00	0.02	0.27	0.56	
q_infr1	-0.26	-0.01	-0.15	-0.16	-0.07	0.03	0.08	0.06	-0.07	0.26	0.11	0.04	0.20	-0.25	0.11	-0.15	-0.15	0.19	-0.17	-0.16	0.03	0.93	0.34	-0.10	0.05	0.09	0.02	1.00	0.83	0.49	
q_infr2	-0.14	0.16	0.02	0.02	0.06	-0.04	0.41	-0.03	0.12	0.15	0.27	0.41	0.28	-0.56	0.18	0.19	0.15	0.39	0.07	0.09	0.33	0.84	0.54	0.02	-0.05	0.04	0.27	0.83	1.00	0.68	
q_infr3	-0.17	0.48	0.15	0.19	0.29	-0.22	0.58	0.14	0.08	0.20	0.35	0.42	0.48	-0.52	0.36	0.33	0.33	0.60	0.32	0.34	0.56	0.55	0.55	0.30	0.44	0.03	0.06	0.56	0.49	0.68	1.00

Source: Calculated by the authors based on quantitative data of the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan (2020)

As the results show, the correlation between quantitative indicators is quite pronounced, especially for those belonging to the same group. This circumstance can be explained by the upward movement of macroeconomic indicators for the period under study and the progressive development of the country as a whole. For example, over the past 5 years, the value of life expectancy has increased by almost 2 years, reaching 73 years in 2019; the rate of coverage with higher and postgraduate education increased by 1.5 times over the same period (from 48.4% in 2015 to 67% in 2019); indicators of total investment in housing construction and environmental protection costs increased by almost 2 times, and in 2019, amounted to 1,475.5 and 420.4 billion tenge, respectively; such indicators as the unemployment rate (from 5.1% to 4.8% by 2019) and crime per 10,000 population (from 221 to 132 units by 2019); and the level of computer and digital literacy of the population aged 6 years and older increased by 15.6% and 11.6% (89.8% and 79.9% in 2019) over the period under review.

Despite the dynamics of these and other quantitative indicators that demonstrate the economic and social progress in developing countries, quality indicators characterized by the data of the annual survey «Quality of life of the population» present the opposite trend in socio-economic satisfaction (Figure 2). As seen from the chart, 13 of 14 indicators show a negative trend in 2019 compared to 2015. In particular, the indicator of satisfaction with the availability of public health services for the same period decreased by 9.2% in 2019, and amounted to only 38.4%. Compared to 2015, level of satisfaction with the quality of public health services and with the quality of housing decreased by 7.1% and 7.2% in 2019, amounting to 32.8% and 51.3%, respectively. Also, the indicator of life satisfaction as a whole dropped by 3.4%. The only indicator with a positive trend over the period under review (with an increase of 8.2%) is the indicator of satisfaction with own financial situation. We feel important to note that despite the positive trend of this indicator, its level remains quite low (37.3% in 2019).

In this regard, we have attempted to determine the influence of quantitative data on qualitative data by means of correlation and regression analysis.

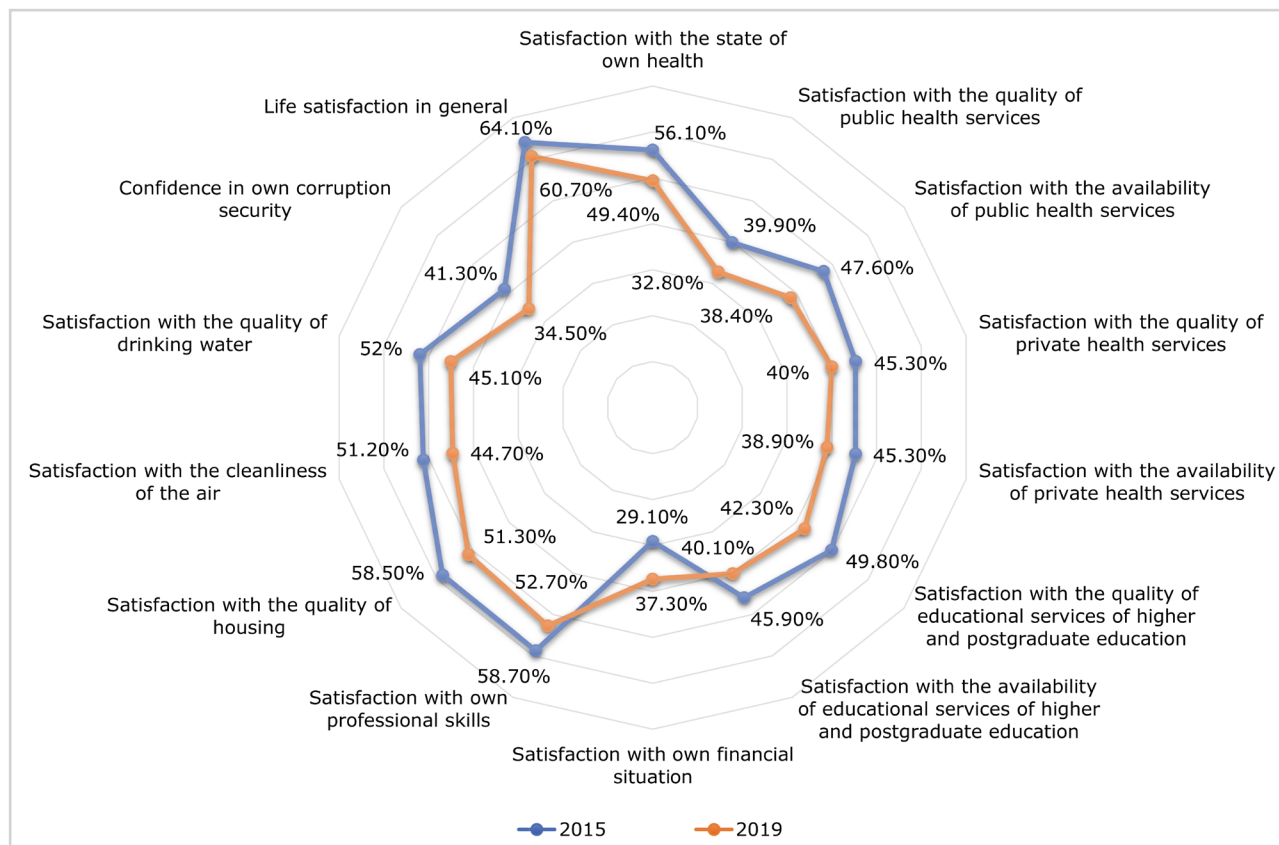


Figure 2:
Dynamics of qualitative indicators of living standards in Kazakhstan for 2015-2019, %

Source: Calculated by the authors based on primary data collected with the survey «Quality of life of the population» by the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan (2020)

2. We have analyzed qualitative indicators based on results of a sample survey performed among 12,000 households (respondents) on the annual survey «Quality of life of the population» for 2015-2019 conducted by the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan. The authors chose to keep only those questions of the study period questionnaires that coincided with the blocks of quantitative indicators. Table 3 shows the encoding of the matching 29 questions (Agency for Strategic Planning and Reforms of the Republic of Kazakhstan, 2020).

The questionnaire data was supplemented with such indicators as «age group,» «gender,» and «region» (Table 4). We have averaged the values of qualitative indicators (by respondents) for each region:

$$x_{avg} = \frac{(x_1+x_2+x_3+\dots+x_n)}{n}, \tag{3}$$

where:

x_i is the value of a respondent i indicator;

n is the number of respondents in the region.

Table 4 shows that despite the growth of such macroeconomic indicators as the average monthly size of assigned pensions, the average monthly salary decreases with an increase in the age of the quality of life index. With age, population assesses the QLI lower than younger ones. Also, noteworthy are the observations of high assessment of the QLI by rural residents compared to the city. Men rate QLI significantly higher than women. From 2015 to 2018, the average life satisfaction of the population of the country tends to decline. Only in 2019, compared to the previous year, this indicator increased by 0.2 points and reached 7.69 points, which is the level of 2017 (Table 5).

Representative data of Table 5 determine the highest mean values of QLI in the regions with a high level of income (Atyrau, Aktobe and Mangistau regions) and in the regions with a low level of income (Kyzylorda and Zhambyl regions). We feel necessary to note the lowest values of QLI in the industrially developed regions (Akmola, Karaganda, Kostanay regions, NKR and EKR). In the cities of national significance Nur-Sultan and Almaty (with a high level of income),

Table 3:
Encoding of matching questions from the questionnaires of the «Quality of life of the population» poll in the framework of national statistical observation conducted in the Republic of Kazakhstan for the period of 2015-2019

No.	Questions	Code
1	How satisfied are you with your health?	hc1
2	How satisfied are you with the cost of public health services?	hc2
3	How satisfied are You with the quality of public services in the health sector?	hc3
4	How satisfied are you with the availability of public health services?	hc4
5	How satisfied are you with the cost of private health services?	hc5
6	How satisfied are you with the quality of private health services?	hc6
7	How satisfied are you with the availability of private health services?	hc7
8	How satisfied are you with the quality of pre-school education services?	edu1
9	How satisfied are you with the quality of general secondary (school) education services?	edu2
10	How satisfied are you with the quality of secondary vocational (special) education services?	edu3
11	How satisfied are you with the quality of higher and postgraduate education services?	edu4
12	How satisfied are you with the availability of pre-school education services?	edu5
13	How satisfied are you with the availability of general secondary (school) education services?	edu6
14	How satisfied are you with the availability of secondary vocational (special) education services?	edu7
15	How satisfied are you with the availability of higher and postgraduate education services?	edu8
16	How satisfied are you with your financial situation?	inc1
17	How satisfied are you with the economic situation of your family (household) as a whole?	inc2
18	How satisfied are you with your professional skills?	empl1
19	How satisfied are you with the quality of the housing you reside in?	lc1
20	How do you assess your ability to purchase housing independently?	lc2
21	How do you assess the state's support in providing you with housing?	lc3
22	Rate the satisfaction with the situation in the place of your stay: cleanliness adjacent to the housing area.	eco1
23	Rate the satisfaction with the situation in the place of your stay: cleanliness of the air.	eco2
24	Please rate the satisfaction with the situation in your community: quality of drinking water.	eco3
25	How confident are you in your own theft security?	saf1
26	How confident are you in your own fraud security?	saf2
27	How confident are you in your own corruption security?	saf3
28	How satisfied are you with your life in general?	Ls1
29	How happy do you think you are?	Ls2

Source: Compiled by the authors based on data from the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan (2020)

the quality of life index values are below average. In view of this, we have constructed correlation matrices that reflect possible relationships between quantitative and qualitative indicators. Due to the large data set, Table 6 shows mean (from 0.5 to 0.7) and high (from 0.7 to 0.9) correlation of coefficients.

As seen from Table 6, quality of life index calculated by the indicators Ls1 and Ls2 positively correlate both with each other and with the indicators inc1 and inc2. It does not correlate with other qualitative indicators. However, after averaging the qualitative indicators to the regions, the correlation of Ls1 and Ls2 with the most of qualitative indicators became significant, which can be explained by a significant smoothing (a trend when averaging 12,000 numerical values of

Table 4:
Mean values of the poll «Quality of life of the population» by age groups, locality and gender for the period of 2015-2019 conducted in the Republic of Kazakhstan

2015																												
Age	Ls1	hc1	incl	empl1	inc2	saf1	saf2	saf3	lc1	eco1	eco2	eco3	lc2	lc3	hc2	hc3	hc4	hc5	hc6	hc7	edu1	edu2	edu3	edu4	edu5	edu6	edu7	edu8
16-25	8.1	8.0	6.2	7.1	7.1	6.6	6.5	6.6	7.5	7.2	7.0	7.1	5.1	5.6	6.5	6.7	7.0	5.8	6.9	6.8	7.4	7.6	7.3	7.2	7.3	8.1	7.3	7.0
25-44	7.9	7.8	6.4	7.8	7.0	6.5	6.5	6.6	7.4	7.2	6.9	7.0	5.3	5.4	6.4	6.5	6.9	5.6	6.9	6.8	7.5	7.6	7.2	7.1	7.3	8.1	7.3	6.9
45-65	7.7	6.9	6.2	7.5	6.9	6.3	6.3	6.4	7.5	7.3	7.0	6.9	5.0	5.0	6.1	6.3	6.8	5.3	6.7	6.7	7.3	7.4	7.1	7.0	7.1	7.9	7.1	6.8
65+	7.5	5.6	6.0	6.5	6.8	6.1	6.1	6.3	7.5	7.2	6.8	6.6	4.3	4.6	6.1	6.3	6.7	5.0	6.5	6.5	6.8	6.9	6.6	6.5	6.7	7.5	6.8	6.5
city	7.6	7.1	6.2	7.4	6.8	5.8	5.8	5.9	7.2	6.7	6.1	6.2	4.7	4.8	5.9	6.0	6.5	5.1	6.5	6.5	6.8	7.0	6.7	6.6	6.4	7.6	6.8	6.4
village	8.1	7.6	6.4	7.6	7.2	7.1	7.0	7.1	7.7	7.8	7.9	7.7	5.5	5.6	6.7	6.9	7.2	6.0	7.1	7.0	7.9	8.0	7.6	7.5	8.0	8.4	7.6	7.3
male	8.0	7.6	6.4	7.7	7.2	6.7	6.6	6.7	7.6	7.3	7.1	7.1	5.3	5.4	6.4	6.6	7.0	5.7	6.9	6.9	7.4	7.6	7.3	7.1	7.4	8.1	7.3	7.0
female	7.7	7.2	6.2	7.4	6.9	6.2	6.2	6.4	7.4	7.1	6.8	6.8	4.9	5.1	6.2	6.4	6.8	5.4	6.7	6.7	7.3	7.4	7.1	6.9	7.1	7.9	7.1	6.8
2017																												
Age	Ls1	hc1	incl	empl1	inc2	saf1	saf2	saf3	lc1	eco1	eco2	eco3	lc2	lc3	hc2	hc3	hc4	hc5	hc6	hc7	edu1	edu2	edu3	edu4	edu5	edu6	edu7	edu8
16-25	7.8	7.8	6.0	6.8	6.3	6.3	6.2	6.3	7.3	7.2	7.0	7.0	5.1	5.3	6.3	6.5	6.7	5.7	6.8	6.6	7.3	7.5	7.2	7.1	7.3	8.0	7.3	6.9
25-44	7.7	7.6	6.2	7.6	6.4	6.1	6.1	6.3	7.2	7.2	6.8	6.8	5.3	5.3	6.2	6.4	6.7	5.6	6.9	6.7	7.4	7.5	7.2	7.0	7.3	8.0	7.2	6.8
45-65	7.6	6.8	6.0	7.5	6.2	6.0	6.0	6.3	7.4	7.3	6.9	6.8	5.0	4.9	6.0	6.2	6.6	5.3	6.7	6.6	7.1	7.3	7.0	6.8	7.1	7.8	7.1	6.7
65+	7.4	5.7	5.8	6.5	6.0	5.8	5.8	6.1	7.5	7.2	6.7	6.6	4.6	4.6	5.7	6.0	6.4	4.9	6.4	6.3	6.6	6.8	6.5	6.4	6.5	7.3	6.7	6.3
city	7.4	6.9	6.0	7.4	6.2	5.6	5.5	5.7	7.1	6.8	6.0	6.0	4.9	4.9	5.8	5.9	6.3	5.1	6.6	6.4	6.8	6.9	6.6	6.6	6.5	7.4	6.8	6.5
village	7.8	7.3	6.2	7.3	6.3	6.6	6.7	6.8	7.6	7.7	7.7	7.6	5.2	5.3	6.5	6.8	7.0	5.7	7.0	6.8	7.7	7.8	7.4	7.2	7.9	8.3	7.6	7.0
male	7.8	7.4	6.3	7.4	6.4	6.3	6.3	6.4	7.4	7.3	7.0	7.0	5.3	5.3	6.2	6.5	6.7	5.6	6.9	6.7	7.4	7.5	7.1	7.0	7.3	7.9	7.3	6.8
female	7.5	6.9	6.0	7.2	6.1	5.9	5.9	6.1	7.3	7.1	6.7	6.7	4.9	5.0	6.0	6.2	6.6	5.3	6.7	6.6	7.2	7.3	7.0	6.8	7.1	7.8	7.1	6.7
2018																												
Age	Ls1	hc1	incl	empl1	inc2	saf1	saf2	saf3	lc1	eco1	eco2	eco3	lc2	lc3	hc2	hc3	hc4	hc5	hc6	hc7	edu1	edu2	edu3	edu4	edu5	edu6	edu7	edu8
16-25	7.9	8.0	6.0	6.6	6.2	6.4	6.4	6.4	7.4	7.3	7.1	7.0	5.1	5.5	6.4	6.6	6.8	5.8	6.9	6.7	7.2	7.5	7.1	6.9	7.3	7.9	7.2	6.8
25-44	7.7	7.6	6.1	7.5	6.2	6.3	6.3	6.3	7.3	7.2	6.9	6.8	5.2	5.3	6.3	6.4	6.7	5.6	6.8	6.6	7.2	7.3	7.0	6.8	7.2	7.7	7.1	6.7
45-65	7.5	6.7	6.0	7.2	6.1	6.1	6.1	6.2	7.3	7.2	6.9	6.8	5.0	5.1	6.0	6.2	6.6	5.4	6.6	6.5	7.0	7.0	6.8	6.6	6.9	7.5	6.9	6.5
65+	7.4	5.7	5.9	6.2	6.0	5.7	5.7	5.9	7.4	7.1	6.7	6.4	4.7	4.6	5.7	5.9	6.4	4.9	6.4	6.3	6.5	6.6	6.3	6.2	6.5	7.1	6.5	6.2
city	7.5	7.0	6.0	7.2	6.2	5.7	5.7	5.8	7.1	6.7	6.1	6.0	5.0	4.8	5.8	5.9	6.3	5.1	6.4	6.4	6.6	6.7	6.5	6.4	6.5	7.2	6.7	6.3
village	7.7	7.3	6.0	7.0	6.1	6.7	6.7	6.7	7.6	7.6	7.7	7.6	5.2	5.5	6.5	6.7	7.0	5.8	6.9	6.8	7.5	7.6	7.2	7.0	7.6	8.0	7.3	6.6
male	7.7	7.4	6.1	7.3	6.2	6.4	6.4	6.4	7.4	7.3	7.1	6.9	5.3	5.3	6.3	6.4	6.7	5.6	6.8	6.6	7.1	7.2	6.9	6.8	7.1	7.7	7.0	6.6
female	7.7	7.0	5.9	7.0	6.1	6.0	6.0	6.1	7.2	7.1	6.8	6.7	4.9	5.0	6.1	6.2	6.6	5.4	6.6	6.5	7.0	7.1	6.8	6.7	6.9	7.6	6.9	6.5
2019																												
Age	Ls1	hc1	incl	empl1	inc2	saf1	saf2	saf3	lc1	eco1	eco2	eco3	lc2	lc3	hc2	hc3	hc4	hc5	hc6	hc7	edu1	edu2	edu3	edu4	edu5	edu6	edu7	edu8
16-25	7.9	8.0	6.6	6.7	7.0	6.5	6.5	6.6	7.3	7.2	7.0	7.0	5.3	5.5	6.4	6.5	6.7	6.0	6.8	6.7	7.3	7.5	7.2	7.0	7.4	7.9	7.4	6.9
25-44	7.7	7.5	6.9	7.6	7.0	6.4	6.4	6.5	7.2	7.1	6.9	6.9	5.4	5.4	6.3	6.3	6.7	5.8	6.8	6.7	7.2	7.2	7.0	6.9	7.2	7.8	7.2	6.8
45-65	7.6	6.8	6.8	7.3	7.0	6.2	6.3	6.4	7.3	7.1	6.9	6.8	5.2	5.1	6.2	6.2	6.5	5.6	6.7	6.6	6.9	7.0	6.8	6.7	7.1	7.5	7.0	6.6
65+	7.4	5.8	6.7	6.1	6.8	5.8	5.8	6.0	7.0	6.9	6.6	6.5	4.8	4.8	5.9	5.9	6.4	5.2	6.4	6.4	6.5	6.5	6.3	6.3	6.6	7.1	6.6	6.3
city	7.5	7.0	6.8	7.2	6.9	5.9	5.9	6.0	7.1	6.8	6.3	6.3	5.1	5.0	6.1	6.1	6.4	5.5	6.6	6.5	6.7	6.7	6.5	6.5	6.7	7.3	6.8	6.4
village	7.8	7.3	6.9	7.2	7.1	6.7	6.7	6.8	7.4	7.5	7.6	7.4	5.5	5.5	6.5	6.5	6.8	5.9	6.8	6.8	7.4	7.5	7.2	7.1	7.7	8.0	7.4	7.0
male	7.7	7.3	6.9	7.3	7.1	6.5	6.6	6.6	7.3	7.2	7.1	7.0	5.4	5.4	6.3	6.3	6.6	5.8	6.7	6.6	7.1	7.2	6.9	6.8	7.2	7.7	7.2	6.8
female	7.6	7.0	6.8	7.1	6.9	6.1	6.1	6.2	7.2	7.0	6.8	6.7	5.1	5.1	6.2	6.2	6.5	5.6	6.7	6.6	7.0	7.0	6.8	6.7	7.0	7.6	7.0	6.6

Source: Calculated by the authors based on primary data of the poll «Quality of life of the population» (Agency for Strategic Planning and Reforms of the Republic of Kazakhstan, 2020)

Table 5:
Dynamics of mean values of life satisfaction index (Ls1) by regions of the Republic of Kazakhstan for the period of 2015-2019

Regions	2015	2017	2018	2019
Akmola	7.16	7.20	7.18	7.24
Aktobe	8.42	8.60	7.81	7.29
Almaty	8.14	7.66	8.07	7.96
Atyrau	8.96	8.66	8.69	8.54
EKR	7.43	7.05	7.43	7.61
Almaty city	7.44	6.77	7.39	7.10
Nur-Sultan city	7.86	7.62	7.71	7.55
Zhambyl	8.47	7.95	7.97	8.15
WKR	7.98	8.22	7.71	7.94
Karaganda	7.02	6.99	7.23	7.30
Kostanay	6.71	6.70	6.47	6.78
Kyzylorda	8.73	8.59	8.30	8.48
Mangistau	8.41	7.84	8.50	8.19
Pavlodar	8.01	7.74	7.87	7.93
SKR	7.85	7.72	7.06	7.04
SKR	7.85	7.79	7.29	7.88
Mean Ls1	7.90	7.69	7.67	7.69

Source: Calculated by the authors based on primary data collected with the poll «Quality of life of the population» (Agency for Strategic Planning and Reforms of the Republic of Kazakhstan, 2020)

Table 6:
Correlation coefficients reflecting the relationship between macroeconomic indicators and the quality of life index in the Republic of Kazakhstan for the period of 2015-2019

	Ls1	hc1	inc1	inc2	Ls2	eco1	eco2	eco3	lc2	lc3	hc5	edu6
q_hc1	0.64	0.75	0.68	0.65	0.57	0.20	0.23	0.42	0.85	0.83	0.67	-0.15
q_hc2	-0.20	-0.21	-0.04	-0.02	-0.21	-0.61	-0.67	-0.45	0.01	-0.06	-0.16	-0.58
q_edu1	0.04	0.00	0.05	0.06	-0.01	-0.47	-0.46	-0.27	0.14	0.17	-0.06	-0.66
q_edu2	-0.30	-0.32	-0.17	-0.18	-0.36	-0.65	-0.66	-0.51	-0.16	-0.14	-0.27	-0.57
q_inc2	-0.52	-0.70	-0.68	-0.63	-0.51	-0.38	-0.39	-0.40	-0.76	-0.75	-0.65	-0.19
q_inc4	-0.61	-0.74	-0.65	-0.64	-0.56	-0.18	-0.23	-0.38	-0.82	-0.82	-0.67	0.13
q_inc5	-0.32	-0.34	-0.02	-0.24	-0.53	-0.44	-0.50	-0.41	-0.09	-0.18	-0.20	-0.47
q_empl1	-0.49	-0.58	-0.56	-0.44	-0.44	-0.21	-0.21	-0.51	-0.66	-0.69	-0.65	-0.02
q_empl3	-0.46	-0.54	-0.60	-0.41	-0.34	-0.21	-0.22	-0.48	-0.68	-0.64	-0.65	0.03
q_lc3	-0.37	-0.42	-0.29	-0.25	-0.39	-0.53	-0.61	-0.64	-0.39	-0.36	-0.41	-0.34
q_lc6	-0.28	-0.25	-0.04	-0.07	-0.34	-0.64	-0.67	-0.62	-0.05	-0.14	-0.26	-0.60
q_dt2	-0.16	-0.17	-0.03	-0.05	-0.24	-0.55	-0.64	-0.53	-0.03	-0.08	-0.20	-0.53

Source: Calculated by the authors based on quantitative indicators and primary data of the survey «Quality of Life of the Population» conducted by the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan (2020)

respondents to 16 regions for the period under review) of the QLI and qualitative indicators. Therefore, the average assessment of quality indicators by region in dynamics by year and region corresponds to Ls1 and Ls2. We would also like to note a positive relationship between the quantitative indicator q_hc1 and such qualitative indicators as hc1, inc1, inc2, lc2, lc3, hc5, Ls1, and Ls2. In addition to the positive correlation of q_hc1 ($r_{xy} = 0.64$), it is necessary to note the inverse correlation of two quantitative «gainful» indicators: q_inc2 ($r_{xy} = -0.52$) and q_inc4 ($r_{xy} = -0.61$). QLI does not correlate with other quantitative indicators, or does insignificantly. In this regard, we have performed a regression analysis for the linear dependence of Ls1 and Ls2 on significant quantitative indicators q_inc2 and q_inc4.

3. Regression allows us to project a dependent variable based on the factor values. Microsoft Excel offers many functions that return not only the slope and shift of the regression line, which characterizes the linear relationship between factors, but also regression statistics. We used a simple linear regression, i.e., projection based on a single metric. To do this, we shall construct a regression line equation using the least squares method and assuming a linear correlation:

$$y = a + bx, \tag{4}$$

where:

the constants a and b are the parameters of the equation;

a is a free regression term interpreted as the initial value of y when $x = 0$;

b is a regression coefficient that shows how much y changes on average when x increases by one unit;

x is an explanatory, independent variable, i.e., q_hc1, q_inc2, and q_inc4 (factor attribute);

y is an explicable, dependent variable, i.e., Ls1 (resulting attribute).

As a result of data approximation using the Regression analysis tool (Data Analysis in MS Excel), we have obtained regression analysis logs (Tables 7, 8, 9, and Figures 3, 4, 5) and the following linear regression equations:

$$Ls1 = 7.07 + 0.48 \times q_hc1. \tag{5}$$

Graphical analysis shows that the empirical values are fairly close to the regression line. This indicates an average close relationship between natural growth and life satisfaction. According to the equation, an increase in the number of natural growth in Kazakhstan by 1% per year leads to an average increase in the QLI of 0.48 points. Should the rate of natural growth equal zero, QLI will be 7.07 points.

As a result, we have obtained the following linear regression equation:

$$Ls1 = 9.9 - 8.57 \times q_inc2. \tag{6}$$

Table 7:
q_hc1 and Ls1 regression analysis log

Regression statistics								
Multiple R	0.64							
R-Squared	0.41							
Normalized R-Squared	0.40							
Standard Error	0.45							
Observations	64							
Analysis of Variance								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance of F</i>			
Regression	1	8.95	8.95	43.81	0.00			
Remainder	62	12.67	0.20					
Total	63	21.61						
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t-statistics</i>	<i>P-Value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Y-intersection	7.07	0.12	61.33	0.00	6.84	7.30	6.84	7.30
Variable X 1	0.48	0.07	6.62	0.00	0.34	0.63	0.34	0.63

Source: Calculated by the authors using Microsoft Excel

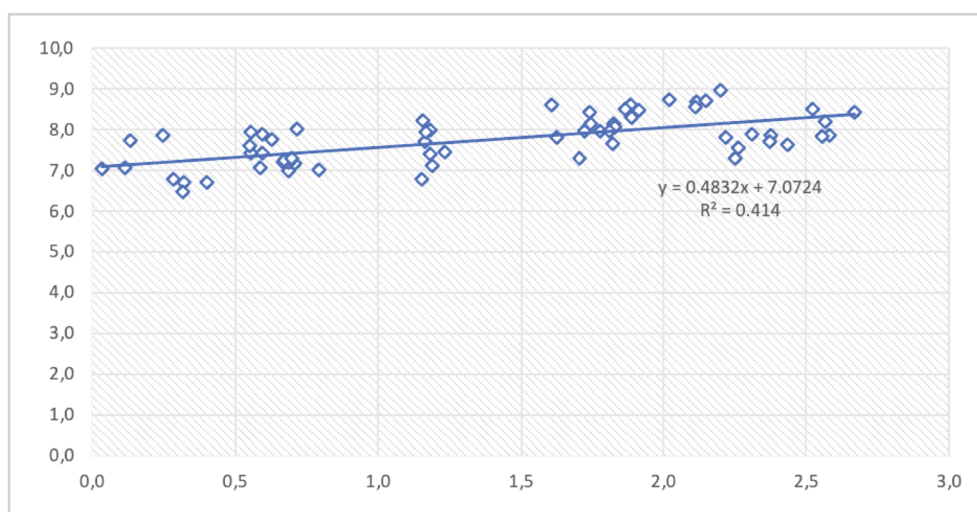


Figure 3:

Diagram of the quality of life index's regression dependence on the results of natural growth of the population in the Republic of Kazakhstan

Source: Compiled by the authors

Table 8:
q_inc2 and Ls1 regression analysis log

Regression statistics								
Multiple R	0.52							
R-Squared	0.27							
Normalized R-Squared	0.26							
Standard Error	0.50							
Observations	64							
Analysis of Variance								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance of F</i>			
Regression	1	5.84	5.84	22.97	0.00			
Remainder	62	15.77	0.25					
Total	63	21.61						
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t-statistics</i>	<i>P-Value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Y-intersection	9.90	0.46	21.72	0.00	8.99	10.81	8.99	10.81
Variable X 1	-8.57	1.79	-4.79	0.00	-12.14	-5.00	-12.14	-5.00

Source: Calculated by the authors using Microsoft Excel

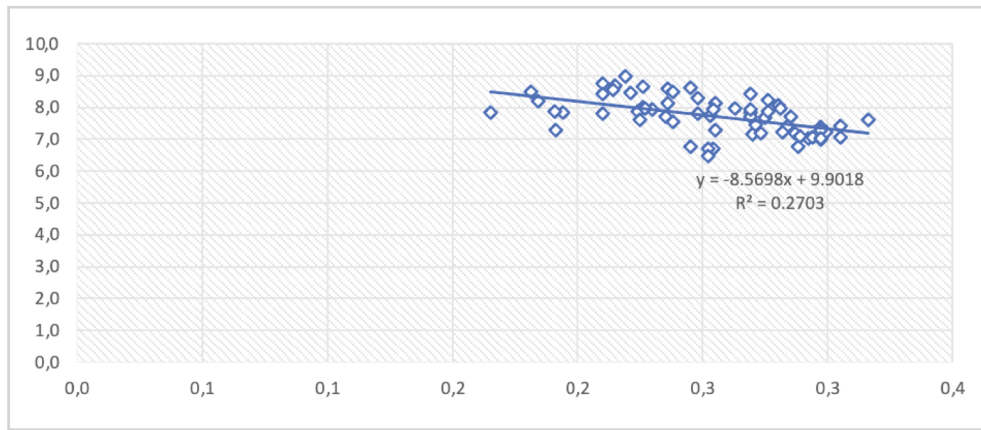


Figure 4:

Diagram of the quality of life index's regression dependence on the results of the Gini coefficient for 10% (decile) groups in the Republic of Kazakhstan
 Source: Compiled by the authors

Table 9:
q_inc4 and Ls1 regression analysis log

Regression statistics								
Multiple R	0.61							
R-Squared	0.37							
Normalized R-Squared	0.36							
Standard Error	0.47							
Observations	64							
Analysis of Variance								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance of F</i>			
Regression	1	7.97	7.97	36.20	0.00			
Remainder	62	13.65	0.22					
Total	63	21.61						
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t-statistics</i>	<i>P-Value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Y-intersection	9.05	0.23	40.12	0.00	8.60	9.50	8.60	9.50
Variable X 1	-0.11	0.02	-6.02	0.00	-0.14	-0.07	-0.14	-0.07

Source: Calculated by the authors using Microsoft Excel

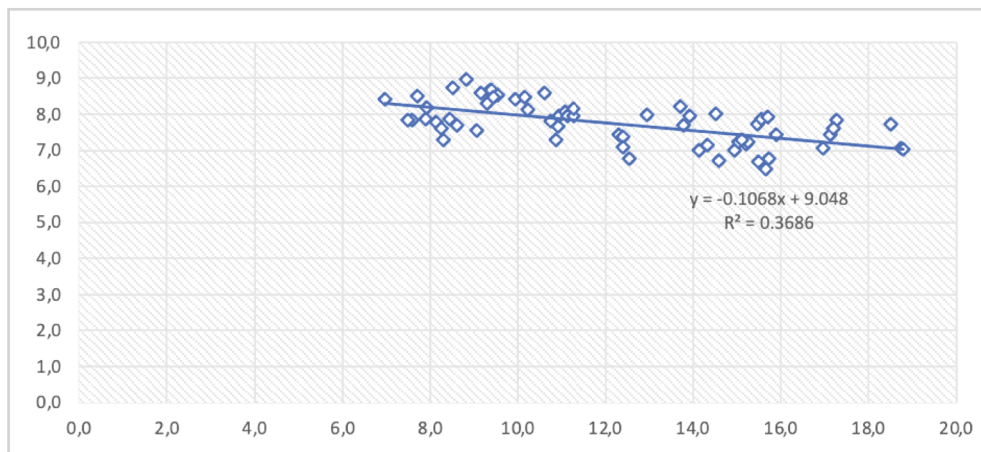


Figure 5:

Diagram of the quality of life index's regression dependence on the results of the number of pension recipients in the Republic of Kazakhstan
 Source: Compiled by the authors

The obtained result shows the average tightness of the inverse relationship between the Gini coefficient and the quality of life index. Based on the regression coefficient before the variable x we conclude the following: Should the indicator of income inequality increase by 0.1 units, we can expect a decrease in life satisfaction by 0.857 points. If the Gini coefficient is zero, then the quality of life index will be 9.9 points out of ten.

The results of data processing indicate the presence of an average tightness of the inverse relationship between the QLI and the number of pension recipients in the Republic of Kazakhstan. The regression equation is as follows:

$$Ls1 = 9.05 - 0.11 \times q_inc4 . \tag{7}$$

Consequently, an increase in the number of pension recipients in Kazakhstan by 1% leads to a decrease in the QLI of 0.11 points, which is further confirmed by the results of the data in Table 4.

6. Discussion

Application of an economic and mathematical model has resulted in a formulation of main conclusions in the context of this scientific study.

1. We have established a direct relationship between natural growth and the results of the life satisfaction as a whole (Figure 6). During the study period, Kazakhstan would show a significant natural increase in the population of 269,182 people by the end of 2019. The main factors affecting population growth in 2019 include the birth rate (402,310 people), an increase in life expectancy (73.18 years) and balance of external migration (-32,970 people). However, it is worth noting that the birth rate in rural areas has a negative trend in contrast to the city, where, despite the large majority of large children tracked, the natural growth has decreased by 7,900 people over the past 5 years. We believe that this has something to do with internal migration, the lack of appropriate living conditions and infrastructure, internet access for educational purposes, low awareness and inaccessibility of high-quality medical care in rural areas.

A necessary condition for achieving a sustainable natural population growth is the simultaneous achievement by the government of such social development goals as: increasing life expectancy and ensuring sustainable growth of real incomes and policies to encourage childbirth, which will provide a total positive attitude to the creation and preservation of families, the childbirth (Niazbekova et al., 2020). Today, in Kazakhstan, the amount of a one-time allowance for the childbirth is from 226 to 374 euros (four children or more), depending on a priority. The monthly child care allowance is from 34 to 53 euros, which is received by all unemployed mothers before they go on maternity leave. Employed women are entitled to two types of payments: child care allowance up to one year of 40% of the mother's average monthly income for the last two years and maternity benefit, the amount of which depends on the woman's average monthly income for the last 12 months. For comparison, the Scandinavian countries, as the leaders of the world rankings in terms of living standards, to increase natural growth, take measures to provide significant financial support to mothers. For example, in Norway, after the birth of a child, a woman receives 100% of her salary for 42 weeks or 80% for a year, with a guarantee of keeping a place for the child in kindergarten. In addition, there is a monthly allowance for the care of a child up to one year in the amount of 761 euros and a child allowance up to 18 years, the amount of which is 107 euros per month to help parents cover the costs associated with raising children.

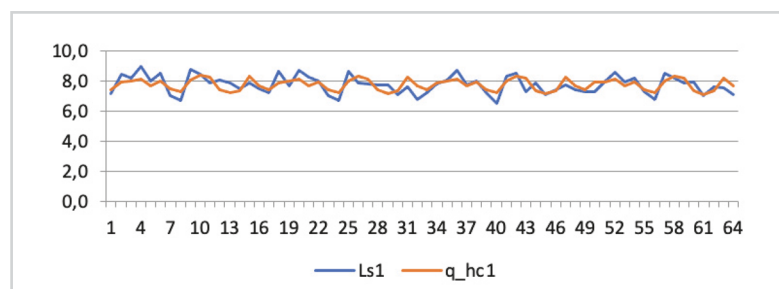


Figure 6:
Dynamics of changes in the dependence of a life satisfaction level and natural growth of the population

Source: Compiled by the authors

2. We have confirmed the inverse relationship between the number of pension recipients and QLI (Figure 7). Kazakhstan is just beginning to enter the category of countries where the elderly population predominates, and the resulting issues in the future should lead to the development of those industries directly related to the service of old age. The main barriers to the development of active longevity in Kazakhstan are concentrated in the health status of the population of pre-retirement and retirement ages, and in the low incomes of older people. Today, the minimum and average monthly size of assigned pensions in the Republic of Kazakhstan is 86 and 203 euros per month, respectively. Despite the annual increase in these payments, compared to European countries, they remain significantly low. For example, the minimum pension in Norway in 2020 was 9,873 euros per year. At the same time, if the pensioner has a dependent spouse of non-retirement age, they receive an additional allowance of 50% of the minimum pension. In Denmark and Switzerland, the amount of pension payments is at least 1,607 and 1,078 euros per month, respectively, according to the results of 2019.

One of the main directions of forming the necessary infrastructure for older people is the development of the health and social services system. The active longevity policy needs to be aimed at improving the living standards by ensuring self-reliance and independence in older ages, increasing the duration of healthy life, and expanding opportunities in retirement age to participate in various areas of society, and in the socio-economic development of the country.

3. We have revealed an inverse correlation between the life satisfaction level and the Gini coefficient, which characterizes the degree of social stratification and income inequality (Figure 8). The deepening of social stratification is manifested in a significant, unjustified difference in remuneration of workers of the same qualification employed in different branches of production, in significant differences in the level of monetary income of citizens and rural residents, between residents of different regions, large and small cities. This leads to a sharp social stratification in both regional and sectoral sections.

The income attribute is a cornerstone factor that empowers people and opens up access to such aspects of living standards as quality and affordable education and healthcare, decent housing conditions and appropriate employment, and much more. During the period under review,

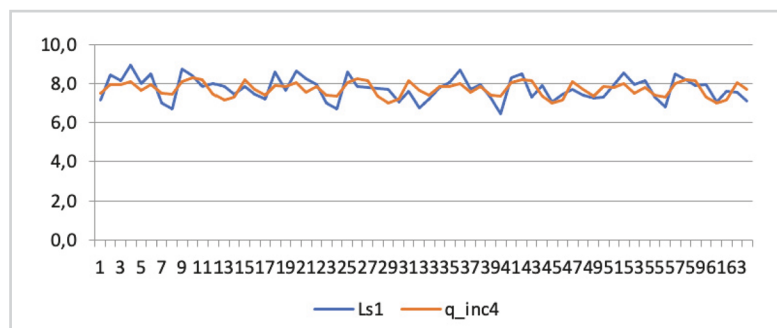


Figure 7:
Dynamics of changes in the dependence of a life satisfaction level and the number of pension recipients
 Source: Compiled by the authors

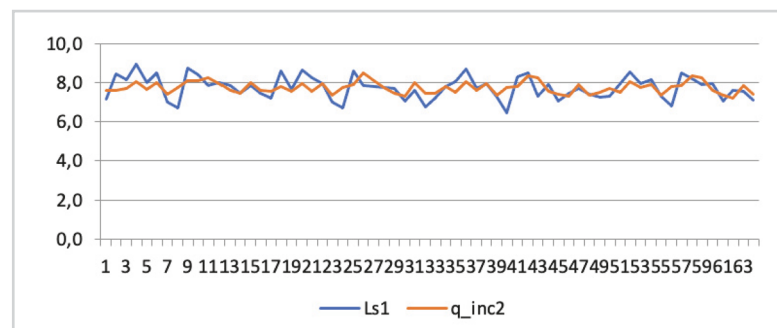


Figure 8:
Dynamics of changes in the dependence of a life satisfaction level and the Gini coefficient for 10% (decile) groups
 Source: Compiled by the authors

the minimum wage in Kazakhstan increased by 12 euros up to 99 euros in 2019. However, despite the increase in average monthly salary in the national currency by 60,794 tenge over the past five years (186,815 tenge in 2019), it also decreased from 513 euros in 2015 to 436 euros in 2019. Despite the positive trends in wage growth, the purchasing power of the national currency is declining against the background of inflation and negative exchange rate differences. We feel important to note that these changes are not sufficient to reduce the significant gap from developed countries of Europe, where the average monthly salary is EUR 5,462 (Luxembourg), EUR 6,068 (Denmark), EUR 7,094 (Norway), EUR 4,338 (Sweden), and EUR 8,148 (Switzerland). For example, Norway does not impose actual requirements for the minimum wage and has no legalized concept of the subsistence minimum, which is determined by calculating the so-called commodity bundle, as is done in most countries of the European Union. Instead of setting minimum wage levels approved by law, Norway's trade unions, which strive to ensure fair wages for their workers and maintain high living standards for their citizens, and agree on worker payments by industry. However, in Norway, there are many costs to be covered by employee benefits, including the above-mentioned minimum wage. For example, there are taxes that, like salaries, are relatively high compared to other countries: income tax in Kazakhstan is 10%; 38.2% in Norway; 57.19% in Sweden; 55.89% in Denmark; the average across Europe is 31.87% (Eurostat, 2019; Ministry of Finance of the Republic of Kazakhstan, 2019).

Social inequality in such Scandinavian countries as Norway and Denmark is one of the lowest in the world. In 2018, Denmark has topped the ranking that evaluates the country's institutional changes aimed at reducing inequality (the Commitment to Reducing Inequality Index). Continuing income differentiation in Kazakhstan is associated with significant inter-sectoral wage inequality and the concentration of income from business activities and property in the hands of a small group of large national companies and oil and gas sector companies (Table 10).

Having analyzed sectoral differences in wages in relation to economic activities in Kazakhstan, we noted a significant difference in the amount of remuneration per employee between such sectors as mining (EUR 975), financial and insurance activities (EUR 488), education (EUR 285), and health and social services (EUR 324) at the end of 2019. Hence, incomes of small groups engaged in fuel and energy complex (in particular, in 2019, mining and quarrying employed 197 thousand people, and financial sector employed 77.7 thousand people)

Table 10:

Cross-country and cross-industry comparison of the average monthly salary per employee by type of economic activity for 2019 and 2020, EUR

Sectors	2019				2020
	Norway	Sweden	Denmark	Kazakhstan	
Agriculture, forestry and fisheries	3942	2729	5575	299	305
Mining and quarrying	7573	3881	8240	975	959
Manufacturing industry	4914	3541	6001	488	496
Electricity, gas, steam and air conditioning	6345	4089	7681	384	382
Water supply; sewerage, waste collection and distribution control	4444	3286	5610	299	282
Construction	4524	3362	5334	601	507
Wholesale and retail trade; repair of motor vehicles and motorcycles	4306	3249	5275	412	400
Transport and warehousing	4743	3041	5447	555	534
Accommodation and catering services	3300	2474	3867	367	373
Information and communication	6247	4354	7053	581	590
Financial and insurance activities	7011	4967	8190	1131	815
Real estate transactions	5700	3541	5743	387	379
Professional, scientific and technical activities	5935	4070	6976	780	673
Administrative and support services	4104	2852	4761	520	399
Public administration and defense; compulsory social security	5147	3570	5979	380	382
Education	4702	3135	5865	285	314
Health and social services	4443	3069	5031	324	389
Arts, entertainment and recreation	4183	2899	5039	357	330
Other types of services	4424	3060	5916	494	476

Note: Average national currency exchange rates against Euro for 2019 are as follows:

1 Euro = 9.8511 Norwegian krone; 1 Euro = 10.5891 Swedish krona; 1 Euro = 7.4661 Danish kroner;

1 Euro = 428.51 tenge (in 2019); 1 Euro = 467.81 tenge (in 2020) (European Central Bank, 2019; National Bank of the Republic of Kazakhstan, 2020).

Source: Compiled by the authors based on data from the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan (2019, 2020), Statistics Norway (2019), Statistics Denmark (2019) and Sweden (2019)

substantially exceed incomes of the general population engaged in other social spheres, in which employment number, on average, is twice bigger (for 2019: 469.3 thousand people in education, 384.2 thousand people in healthcare). Cross-country income differentiation also shows a huge difference of 10 times less on average in Kazakhstan compared to Scandinavia. Current difference in wages in different economy sectors affects changes in the structure of employment, where the labor force, depending on the degree of its mobility, flows to those economy sectors in which wages are significantly higher. This, in turn, leads to a distribution of income that creates inequality in employment income and provokes an outflow of qualified personnel to high-income economy sectors, changing the potential of economic sectors in favor of capital-intensive extractive export-oriented industries or outside the country. A population operating in other industries with relatively low incomes and purchasing power, which leads to an inability to meet fundamental needs such as housing, education, and quality medicine, indicates an inferior reproduction of human potential, demonstrating a model of survival rather than development. In conditions like this, the country loses its competitive advantages, namely, human capital. (Berveno, 2014; Aliyev, 2014). In this regard, we fully endorse the statements of Polterovich, Popov and Tonis (2007), who, as one of the reasons for significant differentiation of population incomes, name market failure, which requires government inefficiency and stems from low quality of institutions (corruption, lobbying, shadow economy). The weak institutional environment limits the ability of the state to effectively redistribute revenues from the oil and gas sector and to implement a balanced macroeconomic policy of improving the living standards and reducing social inequality (Rakhmetova et al., 2019; Kalkabayeva et al., 2020; Skorobogatova et al., 2020).

Thus, the results we have obtained prove that depending on the quality of institutions and public administration performance, including effective use of mineral wealth to diversify the economy (the experience of Norway, Canada, UAE, and other countries) a more accurate identification of existing issues and determination of future prospects in improving the quality of life as the basis for human capital reproduction and future viability of the economy and the state as a whole are possible.

7. Conclusion

In conclusion, we feel important to note that the increase of inequality in income distribution, their lower level in the general population and concentration of resources in the hands of a relatively small group of people employed in the primary sector, lower aggregate consumer demand, make it one-sided, which does not contribute to the development of the real sector of the economy and the living standard improvement. We believe that the current trend is mainly caused by the weakness of an institutional environment, primarily in terms of interaction of political, economic and social institutions.

In this regard, we would like to specify the following promising directions of addressing the existing issues using the tools of state management of the quality of life:

- Through an effective redistribution system based on annual allocations from oil revenues at birth in favor of a citizen on grounds of nationality, to create a socially-oriented infrastructure based on the best practices of United Arab Emirates, where upon marriage, a young family receives housing, land and a government grant at birth in the amount of 50 to 200 thousand US dollars. And to ensure the future of the newborn, a deposit account is opened, which can accumulate about 100 thousand US dollars by the 18th birthday. In addition, children are provided with free higher education (scholarship) and medical care (treatment in clinics abroad);
- For regions with the largest wage gap by industry, to improve working conditions and increase wages, the state needs to develop activities of public institutions in the form of professional associations (trade unions) based on the experience of the Scandinavian countries, which are characterized by a developed social protection system. This included effective cooperation between the employer, the trade union (which consists of more than 50% of workers), and the government, high unemployment benefits and pension payments, social packages ensuring an acceptable level of quality of life;
- Using a set of fiscal policy methods (progressive income taxation, shifting taxation from labor income to capital income, etc.), to develop a public financing mechanism to provide citizens with free education and better medical care, acquisition of progressive labor skills and improvement of living conditions.

The growing socio-economic stratification is becoming the most acute issue of our time. This trend needs to be considered first and foremost, and remain the center of attention when developing social policy in Kazakhstan. In this regard, as the main agenda, remains the issue of strengthening social security and social stability in Kazakhstan. This requires improvement of the public administration system, which should focus on increasing information transparency, accountability and control of public authorities to minimize corruption, to expand the scale of their interaction with the population as the end-user of public services.

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